No. 14-378

IN THE

Supreme Court of the United States

STEPHEN DOMINICK MCFADDEN,
Petitioner,

v.

UNITED STATES OF AMERICA,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Fourth Circuit

BRIEF OF THE NATIONAL ASSOCIATION OF CRIMINAL DEFENSE LAWYERS AS AMICUS CURIAE IN SUPPORT OF PETITIONER

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INTEREST OF THE AMICUS CURIAE[1]

Amicus Curiae National Association of Criminal Defense Lawyers (NACDL) is a nonprofit voluntary professional bar association that works on behalf of criminal defense attorneys to ensure justice and due process for those accused of crime or misconduct.

NACDL was founded in 1958. It has a nationwide membership of approximately 10,000 and up to 40,000 with affiliates. NACDL's members include private criminal defense lawyers, public defenders, military defense counsel, law professors, and judges. NACDL is the only nationwide professional bar association for public defenders and private criminal defense lawyers. The American Bar Association recognizes NACDL as an affiliated organization and awards it representation in its House of Delegates.

NACDL is dedicated to advancing the proper, efficient, and just administration of justice including issues involving juvenile justice. NACDL files numerous amicus briefs each year in the U.S. Supreme Court and numerous other federal and state courts, seeking to provide amicus assistance in cases that present issues of broad importance to criminal defendants, criminal defense lawyers, and the criminal justice system as a whole. NACDL has a particular

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[1] Pursuant to Supreme Court Rule 37.6, counsel for amicus represent that they authored this brief in its entirety and that none of the parties or their counsel, nor any other person or entity other than amicus, its members, or its counsel, made a monetary contribution intended to fund the preparation or submission of this brief. On March 3, 2015, Petitioner Stephen Dominick McFadden filed a blanket consent to the filing of *amicus curiae* briefs. Respondent has consented to the filing of this brief, and a letter reflecting its consent was filed contemporaneously with this brief.

interest in this case because the proper administration of justice requires that ordinary persons be given fair notice of what conduct is criminal. NACDL writes to emphasize the inconsistencies and controversies that have resulted from the federal courts' attempts to apply the "controlled substance analogue" language of 21 U.S.C. § 813, which exposes defendants to the same penalties as those applicable to the possession and sale of Schedule I substances.

INTRODUCTION

The "controlled substance analogue" definition in 21 U.S.C. § 802(32)(A) turns upon little more than a redundant concept of "substantial similarity" in structure or effect. Whether a charged substance is, in fact, an "analogue" of, or "substantially similar" to, a controlled substance is a dispositive factual question for a criminal jury. Yet federal courts sharply disagree on how to instruct and evaluate jury findings of structural similarity. Some courts look at a visual comparison of exemplars that reflect the pre-ingestion structure of the suspect substance. Other courts look at whether the suspect substance metabolizes into the controlled substance after ingestion. And still other courts require similarity in *both* the *pre*-ingestion and *post*-ingestion structures. To complicate matters further, some courts consider legislative history and DEA regulations as sufficient to provide adequate, due process notice to potential violators. One court has suggested that history and regulations are not merely relevant, but dispositive. Yet other courts consider such obscure sources wholly irrelevant to vital questions about adequate notice. The confusion is an unfortunate, but entirely unsurprising, result of the underlying nebulous quality of the "substantial similarity" standard and the fact that there is no scientific consensus on how to measure it.

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Not only is there no scientific consensus, but the methods that courts have employed in these cases have been heavily criticized on many grounds. First, at its core, "substantial similarity" is a political idea and not a genuine scientific concept appropriate for expert testimony. Second, even if it were amenable to scientific rigor, the visual inspection method is unreliable. And third, the structure and effects test simply conflates pharmacological effect with chemical structure and does nothing to address the reliability problems of assessing *chemical* structural similarity and effect by visual inspection alone.

ARGUMENT

I. NO CONSENSUS EXISTS AMONG COURTS AS TO HOW TO GUARD AGAINST JURY CAPRICE.

Courts have held that whether a suspect substance qualifies as a controlled substance analogue is a question of fact. *United States* v. *Klecker,* 348 F.3d 69, 72 (4th Cir. 2003). Accordingly, different juries can and have come to different conclusions about the same substances. Compare *United States* v. *Turcotte,* 405 F.3d 515, 523 (7th Cir. 2005) (jury found 1,4 butanediol (BD) was not an analogue of gamma-hydroxybutryric acid (GHB)), with *United States* v. *Washam*, 312 F.3d 926, 927 (8th Cir. 2002) (jury found BD was an analogue of GHB). Such contrasting results raise troubling questions of arbitrariness in both result and enforcement. There is no legal consensus on the methodology juries should follow to determine whether a suspect substance is an analogue to a controlled substance. Even the forensic scientific community itself is divided on developing the scientific methodology for identifying the compounds in suspect substances.

This confusion is only compounded at the appellate level, where courts review factual findings deferentially. See, *e.g.*, *United States* v. *Fisher*, 289 F.3d 1329, 1337 (11th Cir. 2002). Some courts, instead of attempting to articulate an acceptable and reliable test, have defaulted to a vagueness inquiry. See *Kolender* v. *Lawson*, 461 U.S. 352, 358 (1983) (requiring that statutes provide adequate notice of proscribed conduct and not lend themselves to arbitrary enforcement). Unfortunately, vagueness review itself has generated confusion as to what materials may be relied upon as providing adequate notice. In short, despite significant efforts, the various courts have failed to produce anything like a workable, consistent line marking the outer bounds of "substantial similarity."

A. The Circuits Apply Several Tests That Markedly Differ As To The Elements Used To Determine Whether A Suspect Substance Is "Structurally Similar" To A Controlled Substance.

One difference among the courts concerns the stage or stages at which similarities in chemical composition provide requisite notice of structural similarity. Under the Second Circuit's approach, a suspect substance is structurally similar to a controlled substance if *both* (1) a visual inspection reveals a "readily cognizable similarity prior to ingestion," *and* (2) the suspect substance metabolizes into the controlled substance after ingestion. *United States* v. *Roberts*, 363 F.3d 118, 125 (2d Cir. 2004); *accord United States* v. *Ansaldi*, 372 F.3d 118, 123 (2d Cir. 2004). To focus only on the pre-ingestion visual similarity would fail to capture "relevant characteristics," such as the effect of ingestion, that do not appear in "two-dimensional charts." *Roberts*, 363 F.3d at 124. To

focus only on the post-ingestion metabolization would "offend the plain language of the Act." *Id.* at 125.

Other circuits consider *either* pre-ingestion structure or post-ingestion structure, but not both. The Fourth Circuit, for instance, looks *only* at the pre-ingestion "core" structure, ignoring both the post-ingestion metabolization and "important differences" outside the core. See *Klecker*, 348 F.3d at 71-73. The Fourth Circuit did the same in the instant case. See *United States* v. *McFadden*, 753 F.3d 432, 439-40 (4th Cir. 2014). Conversely, the Eighth and Eleventh Circuits, to the extent they look at molecular structure at all, look *only* at *post*-ingestion metabolization. See *Washam*, 312 F.3d at 931 (focusing on "the fact that [the suspect substance] turns into [the controlled substance] in the body"); *Fisher*, 289 F.3d at 1339 ("It is . . . undisputed that upon ingestion, [the suspect substance] converts into . . . [the controlled substance]. . . . [T]his Court finds that [the suspect substance] upon ingestion meets the definition of a controlled substance analogue as its chemical structure and effect on the central nervous system are substantially similar to [the controlled substance]"); *accord United States* v. *Brown*, 415 F.3d 1257, 1271 (11th Cir. 2005) ("[T]he fact the [suspect substance] converts into [the controlled substance] upon ingestion means that the chemical structures of the two compounds are substantially similar."). Thus, in evaluating the stage at which there is requisite notice of structural similarity, the Fourth Circuit diverges from the Eleventh and Eighth Circuits, and all three diverge from the Second Circuit's pre- *and* post-ingestion test.

Another disagreement among the circuits concerns notice provided by legislative history and DEA regulations. The Eleventh Circuit has held squarely that

legislative history and DEA regulations are irrelevant in determining whether an "ordinary person" would have the requisite notice that a suspect substance was a controlled substance analogue. See *Fisher*, 289 F.3d at 1336-37 ("Although [legislative history and DEA regulations] indicate that both Congress and the DEA considered [the suspect substance] to be an analogue of [the controlled substance], the only thing that matters is that [the suspect substance] meets the controlled analogue definition."). The Second Circuit has suggested the same. See *Roberts*, 363 F.3d at 124 ("It might be argued . . . that the Act gives neither Congress nor the DEA authority to determine that a chemical is a controlled substance analogue. Instead, it leaves that decision to the courts and, as a result, in the absence of prior court decisions, the statutory and regulatory pronouncements provide no real notice.").

In contrast, both the Seventh and Eighth Circuits consider that adequate notice can be found in the legislative history and regulations. See *Turcotte*, 405 F.3d at 533 (finding it "difficult indeed to claim that Turcotte lacked notice as to [structural similarity]" in light of the congressional "statements" noted in *Fisher*); *Washam*, 312 F.3d at 931 (characterizing the congressional guidance noted in *Fisher* as "explicit notice").[2] The Fifth Circuit went a step further, sug-

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[2] In *Washam*, the Eighth Circuit improperly relied upon the Eleventh Circuit's decision in *Fisher* for support. *See Washam*, 312 F.3d at 931. In *Fisher*, the Eleventh Circuit noted that "the public was given notice that all GHB analogues were illegal when Pub. L. 106-172 was enacted . . . and again when the DEA's Final Rule was published in the Federal Register," but the opinion then focuses on the pertinent question of whether an ordinary person would be on notice that the specific substance in that case, GBL, was in fact an analogue of GHB. *Fisher*, 289 F.3d at 1336-37. As to this inquiry the Eleventh Circuit found

gesting that legislative history was not only relevant to notice of structural similarity but actually dispositve. See *United States* v. *Desurra*, 865 F.2d 651, 653 (5th Cir. 1989) (holding that "[t]he legislative history of the Analogue Act makes clear that [the suspect substance] is a controlled substance analogue" and citing no other evidence of similarity).

B. This Confusion Arises From The Lack Of Scientific Consensus And The Language Of The Analogue Act.

The confusion and inconsistencies described above are the natural consequence of applying an uncertain and still-evolving scientific methodology to vague and ambiguous statutory language. As explained more fully in Section II, the lack of scientific consensus has been acknowledged by the courts. See, *e.g.*, *Turcotte*, 405 F.3d at 531-32; *United States* v. *Forbes*, 806 F. Supp. 232, 237 (D. Colo. 1992). The scientific community has likewise concluded that "[t]here is a lack of comprehensive analytical methods available for detection of these compounds." Madeleine J. Swortwood et al., *Determination of 32 Cathinone Derivatives and Other Designer Drugs in Serum by Comprehensive LC-QQQ-MS/MS Analysis*, 405 Analytical & Bioanalytical Chemistry 1383, 1384 (2013). There are diverse reasons that suspect substances can be difficult to identify from a forensic analytical standpoint including, *inter alia*, the large number of potential structures, the constant introduction of novel compounds, and inadequate accessibility to standards. *Id.* As a result, courts must oversee a battle of the ex-

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only the language of § 802(32)(A) relevant and in expressly rejecting reliance upon congressional findings and the regulations, declared: "[T]he Court will use Section 802(32)(A) to determine if ordinary people would be able to determine that GBL is an illegal analogue of GHB." *Id.* at 1337.

perts staged using disparate and uncertain methodologies. See, *e.g.*, *Brown*, 415 F.3d at 1262-63 (recounting competing expert testimony in which prosecution expert attacked defense expert's methodology as unreliable, while conceding that prosecution expert's own method was neither quantitative nor testable).

The disagreement over the science is only exacerbated by fact that the concept of "substantial similarity" is inherently ambiguous. As one court has observed, the word "substantial" provides insufficient guidance when it modifies something non-quantifiable. See *105 Floyd Rd., Inc.* v. *Crisp Cnty.*, 613 S.E.2d 632, 635 (Ga. 2005); cf. *VIP of Berlin, LLC* v. *Town of Berlin*, 593 F.3d 179, 190-91 (2d Cir. 2010).

II. THE ADMISSIBILITY AND RELIABILITY OF THE MOST COMMON METHODS OF DEMONSTRATING SUBSTANTIAL SIMILARITY HAVE BEEN CRITICIZED BY COURTS AND COMMENTATORS, IMPLICATING THE ACCURACY OF ANALOGUE ADJUDICATIONS.

In three decades since the Analogue Act became law, neither the scientific community nor the courts have settled on a consensus methodology for determining whether an alleged analogue has a "substantially similar" chemical structure to a controlled substance. See *Forbes*, 806 F.Supp. at 237-38. Moreover, the most common methods employed by prosecutors to demonstrate substantial similarity have been subject to serious criticism concerning the methodologies' admissibility and reliability. The lack of consensus coupled with the questionable admissibility calls into question the courts' ability to accurately adjudicate analogue cases.

A. Impermissible Expert Testimony Concerning "Substantial Similarity."

Leading evidence scholars challenge the admissibility of visual inspection evidence under the *Daubert* standard. The visual inspection method—a visual comparison of two-dimensional models of the two chemicals—has become one of the more common methodologies relied on by prosecutors. See, *e.g.*, *Brown*, 415 F.3d at 1262; see also Hari K. Sathappan, *Slaying the Synthetic Hydra: Drafting A Controlled Substances Act That Effectively Captures Synthetic Drugs*, 11 Ohio St. J. Crim. L. 827, 837 (2014). Further, as Dr. DiBerardino did in this case, prosecution experts presenting visual inspection evidence to the trier-of-fact frequently opine on the ultimate issue of whether the two-dimensional models illustrate substantial similarity. See, *e.g.*, *McFadden*, 753 F.3d at 437-38; *United States* v. *McKinney*, 79 F.3d 105, 108 (8th Cir. 1996), *vacated*, 520 U.S. 1226 (1997).

However, Professors Edward Imwinkelried and Paul Anacker contend that *Daubert* precludes experts from testifying that two chemical structures are substantially similar based on visual inspection. *Daubert* mandates that expert testimony be confined to reliable "scientific knowledge." *Daubert* v. *Merrell Dow Pharm., Inc.*, 509 U.S. 579, 588-89 (1993). Yet the phrase "substantially similar" is not a defined scientific concept. Paul Anacker & Edward Imwinkelried, *Controlled Substance Analogue Enforcement Act Criminal Defense*, 37 Sw. U. L. Rev. 267, 273-74 (2008). Prosecution experts have admitted that "determinations about whether chemical compounds are substantially similar [are] a gut level thing or based on intuition." *Brown*, 415 F.3d at 1262 (internal quotation marks omitted). Accordingly, an expert's opinion concerning "substantial similarity" does not quali-

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fy as scientific knowledge and is outside the scope of admissible expert testimony under *Daubert*. See Anacker & Imwinkelried, *supra*, at 273-74; see also *General Elec. Co.* v. *Joiner*, 522 U.S. 136, 146 (1997) (noting that courts should exclude evidence under *Daubert* when "there is simply too great an analytical gap between the data and the opinion proffered"). Professors Imwinkelried and Anacker also note that an expert's reliance on a two-dimensional depiction to make such an assertion is less reliable than the expert opinion rejected by the Court in *Kuhmo Tire*. Anacker & Imwinkelried, *supra*, at 273-74; see also *Kumho Tire Co.* v. *Carmichael*, 526 U.S. 137, 153 (1999) (upholding the district court's exclusion of a well credentialed expert's testimony because of concerns about the reliability of the visual and tactile inspection method employed).

A leading and recent forensic science study also cautions against using terms akin to substantially similar when there is not an accepted scientific standard for the term. See Nat'l Research Council, *Strengthening Forensic Science in the United States: A Path Forward* 186 (2009). The report further observes that experts' use of such imprecise terminology in criminal cases may unfairly prejudice criminal defendants as the trier-of-fact is likely to afford considerable weight to the experts' speculation. See *id.*

B. General Reliability Concerns With Visual Inspection.

In addition to the threshold questions about visual inspection for similarity being scientifically sound at all, evidence scholars also have questioned the reliability of the visual inspection method, further implicating its admissibility under *Daubert*. Under *Daubert*, the critical criteria for the admissibility of

expert testimony are its scientific reliability and relevancy. See *Daubert,* 509 U.S. at 592–93.

With respect to visual inspection, scholars have challenged the methodology's probative value, articulating that "[i]t cannot be overemphasized how little information about chemical structure these [visual inspection] diagrams convey." Anacker & Imwinkelried, *supra*, at 273. "The typical sticks-and-letters diagram submitted to a jury in a CS Analogue Act prosecution is a crude, very limited, two-dimensional depiction of some features of chemical structure in which each letter representing an atom is of the same size." Paul C. Giannelli et al., *Scientific Evidence*, § 23.06[c] (Matthew Bender et al. eds., 5th ed. 2012).

Such diagrams are usually devoid of critical information, such as atomic weight and bonding. *Id.* In addition, the two-dimensional nature of the diagrams necessarily conceals important structural features that would be elucidated with a three-dimensional reproduction. See *id.* Even if the comparisons were based on three-dimensional depictions, they would conceal important chemical features beyond the ken of the ordinary trier-of-fact. See *id.* (analogizing comparisons of these diagrams to comparing stick figure portraits or mannequin copies to assess if two people are substantially similar).

Ultimately, these scholars conclude that it is "highly doubtful" that a professional chemist would solely rely on visual inspection to determine if two molecules are substantially similar. *Id.* (citing Dr. Boyd Haley, chemistry professor at the University of Kentucky). Moreover, they posit that "it defies common sense to think that Congress wanted the jury's decision to rest solely on a lay assessment of sticks-and-letters notations." *Id.*

Both federal district and state courts have echoed these scholars' concerns about the reliability of visual inspection. Multiple federal district courts have noted that the "lack of consensus by experts in the field as to the import of [visual inspection] diagrams" raises serious questions about their reliability for establishing substantial similarity. See, *e.g.*, *United States* v. *Roberts*, No. 01 CR 410 (RWS), 2002 WL 31014834, at *4 (S.D.N.Y. Sept. 9, 2002), *vacated*, 363 F.3d 118 (2d Cir. 2004). Further, state appellate courts have cited Professor Imwinkelried's criticisms for the proposition that the use of visual inspection evidence inherently pose reliability questions that, at the very least, mandate a *Daubert* hearing prior to admission. See *State* v. *Shalash*, 13 N.E.3d 1202, 1212-15 (Ohio Ct. App. 2014).

C. The Reliability Concerns Persist With The Structure And Effect Test.

As an alternative to solely relying on visual inspection to establish substantial similarity, some courts use the structure and effects test. However, this test fails to adequately resolve reliability concerns presented by visual inspection alone and offers only another ground for disagreement among courts and scientists.

The structure and effects test combines visual inspection with testimony about the effects of the chemical after metabolization. See *Fisher*, 289 F.3d at 1339. But, these independent components of the test speak to different elements of the offense. The Controlled Substance Analogue Act requires proof that the alleged analogue has both a similar chemical structure and similar pharmacological effect as the controlled substance. See 21 U.S.C. § 803(32)(i) & (ii). The effects of the chemical after metabolization speak to the pharmacological effect. See *Roberts*, 2002 WL

31014834, at *5. Accordingly, relying upon effects *after* metabolization to support the notion that the chemicals are structurally similar inappropriately conflates the similar chemical structure requirement of the analogue definition with the pharmacological effects requirement. *Id.*

At bottom, the structure and effects test still must rely upon the visual inspection method in order to satisfy the similar chemical structure requirement. The reliability concerns of the visual inspection method therefore cannot be overcome by the use of the structure and effects test.

CONCLUSION

For the foregoing reasons, this Court should reverse the opinion of the Fourth Circuit in this case.

Respectfully submitted,

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